



INDIA



It's Rich Cultural Heritage and Modern Science

An Example : India's Space Research Program

From the study of astronomy (thousands of years ago) to launching of modern day satellites (now) to planning a lunar mission (future)

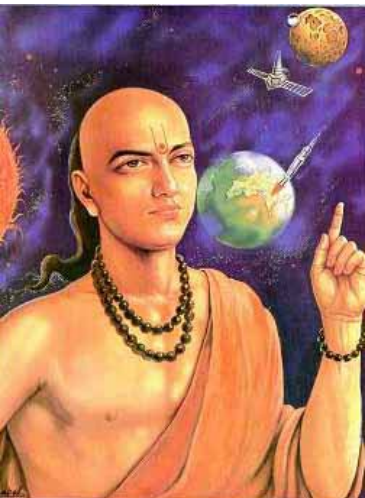
Astronomy in Ancient India



Celestial Observatory



Tool for keeping track
of the constellations



Aryabhata



Sun Dial



Jantar Mantar in Jaipur

<http://www.crystalinks.com/indiastronomy.html>



Department of Space Indian Space Research Organisation

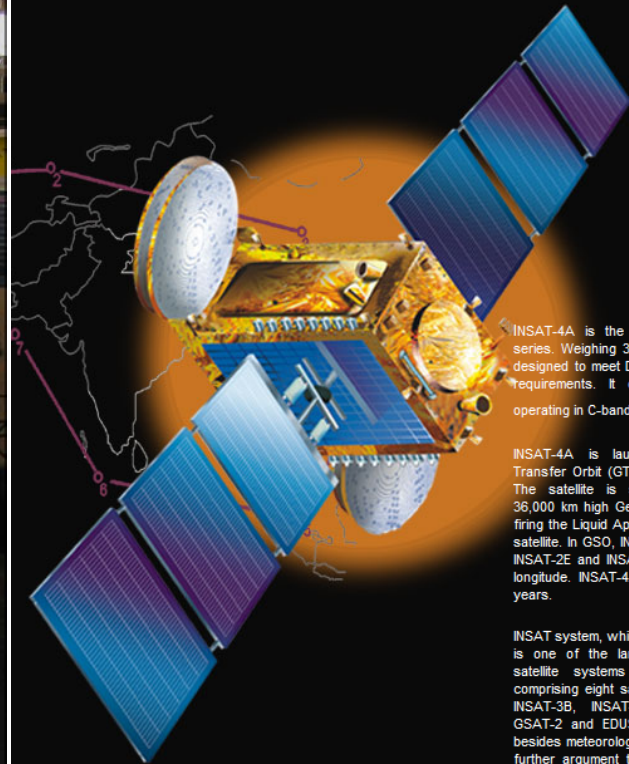
Hindi Version

[Our Chairman](#) [About ISRO](#) [ISRO Centers](#) [Programmes](#) [Decade Plan](#) [Milestones](#)

The prime objective of ISRO is to develop space technology and its application to various national tasks. ISRO has established two major space systems, INSAT for communication, television broadcasting and meteorological services, and Indian Remote Sensing Satellites (IRS) system for resources monitoring and management. ISRO has developed two satellite launch vehicles, PSLV and GSLV, to place INSAT and IRS satellites in the required orbits.



INSAT-4A

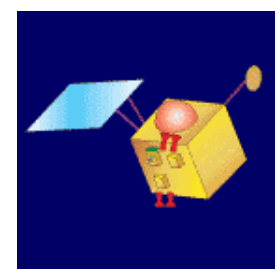


INSAT-4A is the first satellite of the INSAT-4 series. Weighing 3,100 kg at lift-off, INSAT-4A is designed to meet Direct-to-Home (DTH) broadcast requirements. It carries 24 transponders, 12 operating in C-band and the other 12 in Ku-band.

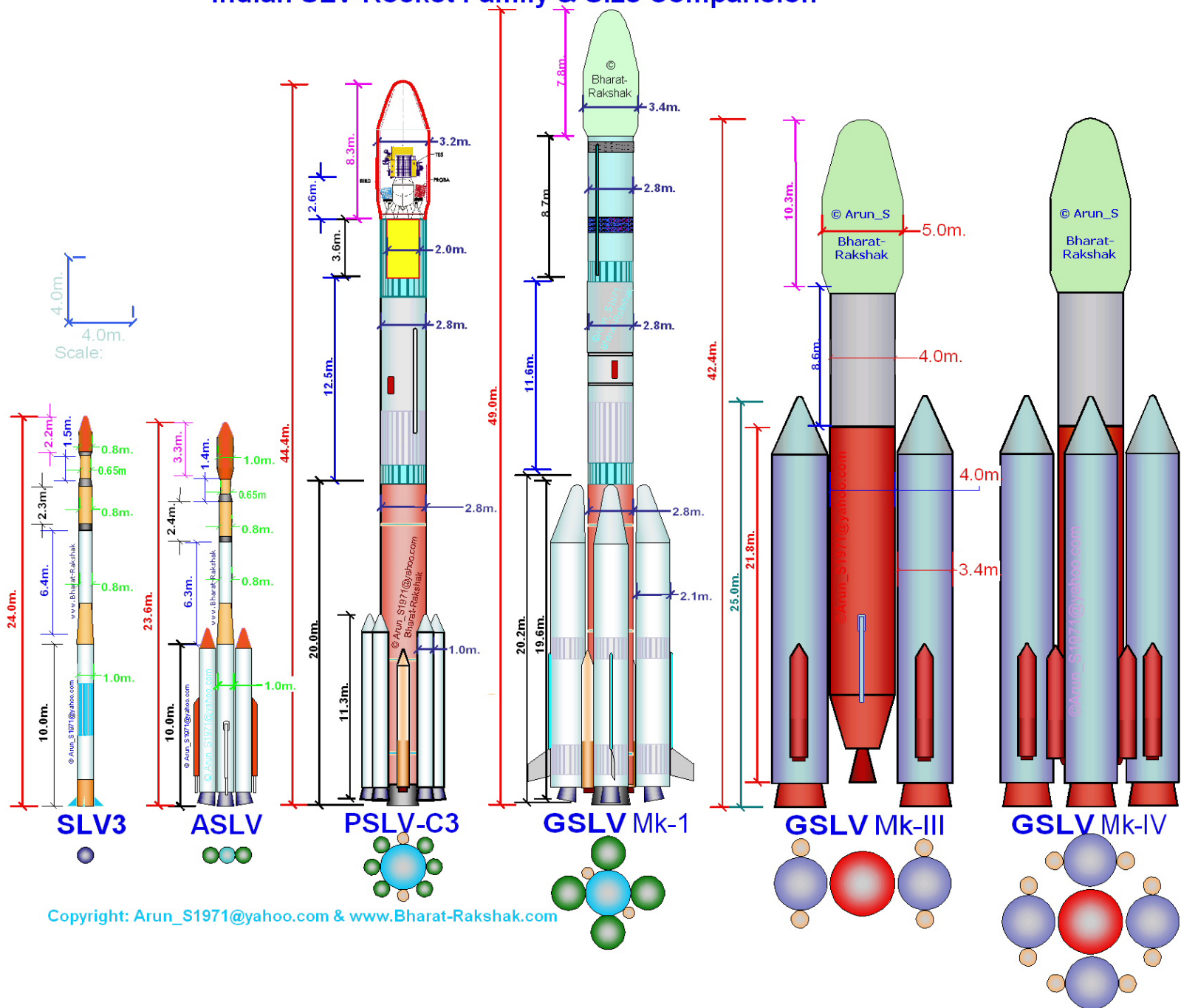
INSAT-4A is launched into Geosynchronous Transfer Orbit (GTO) by Ariane-5 launch vehicle. The satellite is subsequently manoeuvred to 36,000 km high Geosynchronous Orbit (GSO) by firing the Liquid Apogee Motor (LAM) on-board the satellite. In GSO, INSAT-4A will be co-located with INSAT-2E and INSAT-3B satellites at 83 deg East longitude. INSAT-4A is designed for a life of 12 years.

INSAT system, which was established in 1983, is one of the largest domestic communication satellite systems in the Asia-Pacific region comprising eight satellites - INSAT-2E, INSAT-3A, INSAT-3B, INSAT-3C, INSAT-3E, KALPANA-1, GSAT-2 and EDUSAT - with 150 transponders besides meteorological instruments. INSAT-4A will further augment the INSAT system capacity by adding another 24 transponders to the system and

Indian Space Research Organisation

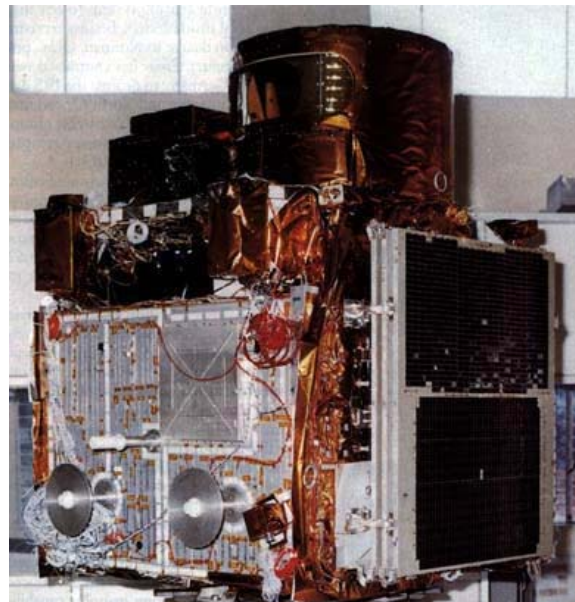


Indian SLV Rocket Family & Size Comparision



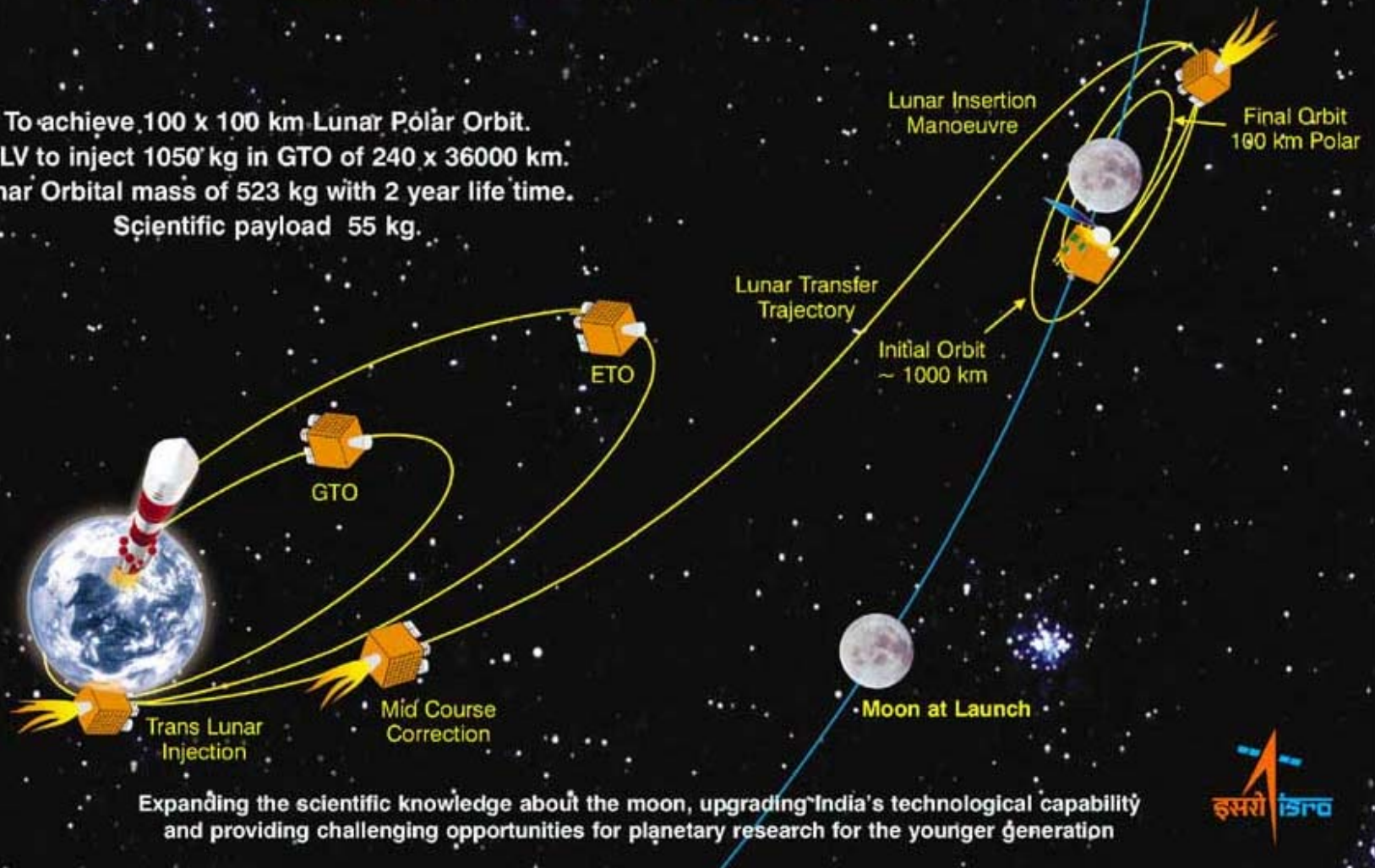


A. Satish Dhawan Space Center



INDIA'S FIRST MISSION TO MOON CHANDRAYAAN-1

To achieve 100 x 100 km Lunar Polar Orbit.
PSLV to inject 1050 kg in GTO of 240 x 36000 km.
Lunar Orbital mass of 523 kg with 2 year life time.
Scientific payload 55 kg.



Expanding the scientific knowledge about the moon, upgrading India's technological capability and providing challenging opportunities for planetary research for the younger generation





Indian Space Research Organisation

Prime Minister Announces Mission to Moon

August 16, 2003

Indian Space Research Organisation

[About ISRO](#)

Indian space programme driven by vision of Dr Vikram Sarabhai considered as the father of Indian Space Programme.

There are some who question the relevance of space activities in a developing nation. To us, there is no ambiguity of purpose. We do not have the fantasy of competing with the economically advanced nations in the exploration of the moon or the planets or manned space-flight. But we are convinced that if we are to play a meaningful role nationally, and in the community of nations, we must be second to none in the application of advanced technologies to the real problems of man and society. "



Indian Space Research Organisation

ISRO and NASA Sign MOU on Chandrayaan-1

May 9, 2006



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PRESS RELEASE

Date Released: Tuesday, May 9, 2006

Source: [NASA HQ](#)

NASA Agrees to Cooperate With India on Lunar Mission



NASA will have two scientific instruments on India's maiden voyage to the moon. Tuesday, NASA Administrator Michael Griffin and

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his counterpart, Indian Space Research Organization Chairman G. Madhavan Nair, signed two Memoranda of Understanding in Bangalore, India, for cooperation on India's Chandrayaan-1 mission.

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Mr G Madhavan Nair, Chairman, ISRO, and Dr Michael Griffin, Administrator, National Aeronautics and Space Administration (NASA) of USA today (May 9, 2006) signed Memoranda of Understanding (MOU) at ISRO Satellite Centre (ISAC), Bangalore, on inclusion of two US Scientific instruments on board India's first mission to Moon, Chandrayaan-1. These instruments are - Mini Synthetic Aperture Radar (Mini SAR) developed by Applied Physics Laboratory, Johns Hopkins University and funded by NASA and Moon Mineralogy Mapper (M³), jointly built by Brown University and Jet Propulsion Laboratory (JPL) of NASA.



Mr G Madhavan Nair, Chairman, ISRO (centre) and Dr Michael Griffin, Administrator, NASA (right), signing MOU on Chandrayaan-1 at ISRO Satellite Centre.